R E P O R T R E S U M E S

ED 017 743 VT 005 268

RESEARCH VISIBILITY. VOCATIONAL EDUCATION IS SERVICE--CURRICULUM DEVELOPMENT AND INSTRUCTIONAL MATERIALS.

BY- LAW, GORDON F.
AMERICAN VOCATIONAL ASSN., WASHINGTON, D.C.

PUB DATE FEB 68

GRANT OEG-2-7-070633
EDRS PRICE MF-$0.25 HC-$0.72 16P.

DESCRIPTORS- *BIBLIOGRAPHIES, *VOCATIONAL EDUCATION, *TECHNICAL EDUCATION, *CURRICULUM DEVELOPMENT, PROGRAMED INSTRUCTION, INDUSTRIAL ARTS, SUMMER INSTITUTES, CONFERENCES, RESEARCH REVIEWS (PUBLICATIONS), *EDUCATIONAL RESEARCH, CURRICULUM, RESEARCH PROJECTS, DEMONSTRATION PROJECTS,

SIXTEEN RESEARCH REVIEWS IN THIS ISSUE PERTAIN TO CURRICULUM DEVELOPMENT AND INSTRUCTIONAL MATERIALS, ONE OF THE MAJOR AREAS OF CONCERN IDENTIFIED BY THE PANEL OF CONSULTANTS ON VOCATIONAL EDUCATION. THEY ARE ORGANIZED UNDER THE TOPICS--(1) CURRICULUM DEVELOPMENT INSTITUTES AND LABORATORIES WHICH INCLUDES SUMMER INSTITUTES ON FLUID POWER, CONFERENCES ON OCCUPATIONAL DATA FOR EDUCATIONAL PLANNING, AND CAREER DEVELOPMENT THEORY AND RESEARCH FOR THE SCHOOL CURRICULUM, (2) NEW VOCATIONAL CURRICULUM PROGRAMS WHICH INCLUDES VOCATIONAL AGRICULTURE CURRICULUM CHANGE, INDUSTRIAL ARTS CURRICULUM PROJECT TELEVISION INSTRUCTION, SALES SKILLS, GROUNDSMAN-GARDENER TRAINING, THE CLUSTER CONCEPT, CHANGES IN SHORTHAND, STENOGRAPHY COURSE DEVELOPMENT, TECHNICAL EDUCATION CURRICULUMS, AND BUILDING DESIGN SEMINAR, (3) NEW FORMS OF EDUCATIONAL MEDIA WHICH INCLUDES THE RELATIVE EFFECTIVENESS OF BLOCKED VERSUS SPACED REVIEW WITH PROGRAMED INSTRUCTION, AND (4) EMERGING PROGRAMS BEYOND HIGH SCHOOL WHICH INCLUDES ELECTRONICS CONTENT ANALYSIS AND A DESCRIPTION OF A REMEDIAL INDUSTRIAL TECHNOLOGY CURRICULUM PROGRAM FOR DISADVANTAGED HIGH SCHOOL STUDENTS. "PLAIN TALK," A CONTINUING COLUMN BY THE AUTHOR, REITERATES HIGHLIGHTS FROM THE REVIEWS AND ASKS QUESTIONS RELATIVE TO SHORTCOMINGS AND DIRECTIONS OF OCCUPATIONAL EDUCATION. THE BIBLIOGRAPHY LISTS 22 RELATED STUDIES WHICH ARE IN PROGRESS. THIS ARTICLE IS PUBLISHED IN THE "AMERICAN VOCATIONAL JOURNAL," VOLUME 43, NUMBER 2, FEBRUARY 1968. (EM)

DOCUMENT FILMED FROM BEST AVAILABLE COPY

ED017743

*"Research Visibility" is a research project of the American Vocational Association. The purpose is to give visibility to significant research: experimental, demonstration and pilot programs; upgrading institutes, seminars and workshops; and other leadership development activities for teachers, supervisors and administrators. The "Research Visibility" report synthesizes important projects which have been reviewed, selected and analyzed for their value to vocational, technical and practical arts educators, guidance personnel, and other leaders in education, manpower and related fields. A composite bibliography of significant research and development materials is included.

The project is cooperatively financed by the American Vocational Association and a Vocational Education Act of 1963 grant (OEG 2-7-070033, project 7-0033; "Synthesis and Application of Research Findings in Vocational Education").

VOCATIONAL EDUCATION IS SERVICE . . .

The major problems which have been identified with vocational curriculum development and the preparation of instructional materials are associated with the diversity of students involved, and with the general lack of coordination and articulation among the various types of school and college organizations that provide vocational instruction.

When making specific recommendations for improving vocational curriculum and instructional materials, the Panel of Consultants called attention to the need for large unit laboratories for the production and distribution of instructional materials. The Panel further recommended that curriculum programs for new and changing occupational fields should be developed which would include programed learning and other new forms of educational media, and that persons out of school, particularly those with special handicaps to learning, should receive special attention.

The recommendation for the establishment of national or regional curriculum laboratories has been an item frequently discussed in federal offices. For some reason, action has not as yet been taken to create such facilities and programs.

In the absence of large unit curriculum operations, it may be assumed that research and development activities in many occupations will continue to be incomplete, sporadic and fragmented. Curriculum projects conducted by school districts, and other administrative units with limited resources, will be bound to concentrate on those vocational fields having the most programs and largest student enroll-

VT005268

Curriculum Development and Instructional Materials

TABLE OF CONTENTS

INTRODUCTION ..... page 33

CURRICULUM DEVELOPMENT INSTITUTES AND LABORATORIES ... page 34
- Fluid Power Institutes
- Need for Occupational Data
- Career Development Conference

NEW VOCATIONAL CURRICULUM PROGRAMS ..... page 36
- Vo-Ag Curriculum Change
- I.A. Curriculum Project
- Television Instruction for Youth
- Skills in Sales
- Groundsman-Gardener Training
- The Cluster Concept
- Changes in Shorthand
- Typography Course Development
- Technical Education Curricula
- Building Design Seminar

NEW FORMS OF EDUCATIONAL MEDIA ..... page 44
- Programed Instruction

EMERGING PROGRAMS BEYOND HIGH SCHOOL ..... page 44
- Electronics Content Analysis
- Industrial Technology Curriculum

PLAIN TALK ..... page 46

BIBLIOGRAPHY ..... page 47
- Completed Studies
- Studies in Process

Dr. Gordon F. Law is editor of "Research Visibility." The organization for this department of the JOURNAL, the pattern for reporting and the writing represent his work.

ments. The need for curriculum work in new and emerging occupations may be overlooked. Also, the financial resources necessary for intensive research and subsequent construction of instructional materials would be prohibitive where there would be limited local enrollments.

A recent publication, *Developing Vocational Instruction*, by R F. Mager and K. M. Beach, has been made available through Fearon Publishers, 2165 Park Blvd., Palo Alto, Calif., at $2.00 a copy. Derived from an Office of Education publication bearing the same title, this monograph presents a systematic approach to course development. Included are chapters relating to job description and task analysis, target population, measuring instruments, and sequencing instructional units. This 83-page booklet should be of interest to anyone involved in vocational curriculum work.

The ERIC Clearinghouse Document, *Abstracts of Instructional Materials in Vocational and Technical Education* (AIM), which is issued quarterly, is an important source of curriculum materials typically designed for teacher or student use. These publications, which are available through the Center for Vocational and Technical Education, 930 Kinnear Rd., Columbus, Ohio 43212, should be of particular interest to teachers, curriculum specialists, supervisors, and administrators. The single publication cost is $2.79. Annual subscriptions are $9.00.

TOPIC ONE: Curriculum Development Institutes and Laboratories

Fluid Power Institutes

6:1 "1966 Summer Institutes on Fluid Power Education for Vocational and Technical Teachers" by Theodore Pearce. The Fluid Power Society, Thiensville, Wis. (Project = 5-0019) 1967. (VT = 004-122) 17 pages.

This report recognizes the serious shortage of skilled workers and technicians trained in fluid power and the lack of qualified people to teach fluid-power technology in industrial and vocational programs. The project offered an opportunity to investigate the most effective techniques for introducing a new technology to educators.

During the summer of 1965, U.S.O.E. supported a contract providing for summer institutes on fluid-power education. These five institutes were attended by 167 teachers of vocational and industrial education. The 1965 program was evaluated as "extremely successful." The 1966 program was undertaken because there still existed a need to train additional qualified teachers and to provide for the further application and refinement of effective techniques.

Ultimate Objectives

The ultimate objectives were to:

—Prepare young people for gainful employment in industries which manufacture or use fluid-power systems.

—Provide prevocational preparation for young people to continue vocational education in fluid power.

—Provide groundwork for a continuing research project to evaluate the institutes, and to research their results and techniques in terms of their effect on the participants, the participants' home schools, and their students.

More specifically, the purposes of the project were to:

1. Develop an adequate base of teachers in the United States qualified to teach fluid power.

2. Provide for instruction in basic fluid-power theory and application, and develop competencies in the participants which will enable them to teach and to enlarge their knowledge of fluid power.

3. Identify desirable curricula with instructional units in fluid power on the junior, senior and vocational high school levels, and at the technical institute—adult education levels.

4. Provide planning techniques for follow-up activities in schools represented by the participants.

5. Determine the most effective techniques for the development of teachers in a new technology.

The Fluid Power Society administered and coordinated institutions and, through advisory groups, established the content and procedures. The Society also made contracts with five colleges and universities in accessible geographic regions to provide facilities and instruction.

Each institute had at least one full-time instructor as well as guest lecturers and consultants. Weekly evening workshops and seminars were conducted in which participants were divided into teams for curriculum development. Each team developed a recommended curriculum, while each participant suggested specific activities related to course content.

A variety of teaching demonstration devices were used, and 150 copies of instructional materials were supplied to each participant.

Seventy-five participants from 24 states were selected. They qualified as staff teachers of vocational education at secondary schools, vocational schools, post-secondary or teacher-training institutions which provided, or intended to include, fluid-power instruction.

The program was evaluated as highly successful. The uniform tests administered at the beginning and end of the program showed a considerable increase in mean scores. According to the preliminary analyses of the evaluation sheets given to directors and participants, the level of instruction was better when the director was not involved in teaching. Guest lecturers were judged slightly less effective than the instructors. The curricular plans drawn up by the participants included recommendations for the preparation of an evening program for employed adults, and the establishment of a curriculum committee to prepare guides for city or state.

Five Conclusions

The following conclusions are common to the 1965 and 1966 programs:

—The summer institute can be an effective vehicle for introducing a new technology for teachers.

—A program can best succeed when participants are intense, leave their families at home and live on-campus.

—A new technology should use the professional society which represents it as a coordinating agency, unifying activities involving cooperating educational institutions.

—A broad range of affiliated organizations and existing committees is essential in eliciting support and advice.

—Similar programs should offer graduate credit.

Need for Occupational Data

6:2 "Occupational Data Requirements for Education Planning" by Georgianna B. March. University of Wisconsin, Madison, Wis. (Project # 5-0360) 1966. ERIC # ED 010 491. MF $0.27 HC $7.20. 165 pages.

The Conference on Occupational Data Requirements for Education Planning, held at the University of Wisconsin on June 15-16, 1965, is the substance of this report.

Forty economists, educators and government personnel participated in the program. They were chosen "because of their interest and continuing study in the field of the labor market and its relation to educational programs."

The material contained in this report comprises chiefly the edited transcripts of 21 papers and presentations on four major topics:

1. The Occupational Data Requirements for Education Planning.

2. The Role of Technological Forecasting in the Development and Use of Manpower.

3. Foreign Experience in the Utilization of Occupational Data for Educational Planning.

4. The Evaluation of Occupational Data and Their Use in Occupational Planning.

It was reported that at least two distinct schools of thought appeared to emerge from the sometimes-heated exchanges. One group felt that the need for occupational data is urgent. The arguments were that information on labor demands is essential for the use of guidance services and as background for legislative measures and school planning.

On the other hand, "An equally vocal group of conferees denied that increased efforts to provide occupational data would improve educational planning. Because of the weaknesses in the methodology of current occupational studies, and because of the difficulties inherent in obtaining accurate data from employers on current and projected job vacancies, this group felt that further expansion of studies of occupational data would be a questionable investment of government funds.

"Regardless of the views concerning the desirability of expanded study of occupational demand, one of the principal findings of the Conference was the extent of ignorance about the availability of current data and the uses to which existing data were being put."

This report contains a wealth of ideas and points of view that should be especially meaningful to graduate seminars relating to the vocational curriculum. The general high quality of presentations and the timely and provocative nature of the topics discussed make this report a valuable document. It should be of interest to all serious students of vocational and practical arts education.

Career Development Conference

6:3 "Conference to Examine the Implications of Current Trends in Career Development Theory and Research for School Curriculum" by David Tiedeman and Kenneth Ashcraft. National Vocational Guidance Association, Washington, D.C. (Project # 5-1301) 1966. ERIC # ED 010 132. MF $0.36 HC $8.20. 194 pages.

The four-day career development conference, held at Airlie House, Warrenton, Va., came about as a result of a proposal submitted by the National Vocational Guidance Association.

A planning committee of the NVGA selected topics for the conference and chose persons identified as prominent innovators to prepare papers for distribution prior to the conference and then make presentations at the conference. Eight background papers and three substantive papers were prepared.

Following each presentation, a participant reacted to the paper and presentation. There were also periods for small group meetings in which each of six groups was given assignments for developing implementation procedures.

During the final morning, three summarizing presentations covered Implications for Curriculum, Implications for Counselor Education, and Implications for Research. Discussion-group reports were also summarized.

The objectives of the conference were stated to:

1. Expand the dialogue between occupational theorists and researchers, counselors, vocational educators, and curriculum specialists by mobilizing and sharing knowledge in career guidance, behavioral science, labor market and manpower information, and curriculum development.

2. Identify concepts of occupational behavior and work in a changing society which should be incorporated into curricular practice.

3. Conceptualize vocational readiness and the related structure of motives in youth at different age-grade levels.

4. Identify areas of research which need attention and demonstration projects by which new approaches to vocational guidance might be systematically explored within the curriculum setting.

5. Identify vocational topics and types of competencies which might augment and strengthen counselor-education programs.

6. Disseminate the hoped-for insights and conclusions of the proposed conference by making the proceedings widely available to counselors and counselor-educators, vocational psychologists, vocational educators, and curriculum specialists.

Kenneth Ashcraft reported the following results of the conference:

—It was evident that those from each discipline had rather common perceptions within their own group but that these perceptions were quite divergent among the various disciplines represented in the conference.

—There seemed to be general agreement that the meaning of work is deeply interwoven with our value system. As productivity in our affluent society is increasingly achieved by machine performance, man increasingly attains a sense of satisfaction through service to his fellow man. It is imperative that our educational system make youth aware of such changes.

—Dr. Tiedeman prepared a structural conceptualization relating age, developmental stages and counselor functions in a most definitive way.

—It became evident that we need much exploration of various curricu-

lar patterns to ascertain the strengths and weaknesses of approaches to vocational guidance. Why are some group programs effective in one setting, yet relatively ineffective in another?

— A number of counselor-educators believed that more efficient ways of training counselors-to-be should be developed so as to give them a better perception of workers' attitudes toward their jobs and the relationship of their jobs to their way of life.

— Plans have been adopted to publish the proceedings of the Conference for wide distribution to counselors, counselor-educators, vocational psychologists, vocational educators, and curriculum specialists.

In his summary presentation, "Curriculum Implications for Career Development", Robert G. Woods proposed a total of 13 guidelines for implementing a curricular program for career development and a seven-stage process for initiating a new program. The report also contains transcripts of "Implications for Counselor Education" by Carl McDaniels and "Implications for Research" by David Tiedeman.

The real significance of this report is that it illustrates a growing interest in making vocational guidance a regular part of the school curriculum. For example, Tiedeman's chart depicts vocational development stages and some concepts, responsibilities and procedures for the cultivation of career development. This chart is now the subject of considerable attention in vocational guidance circles, and hence, the information it contains will surely become widely known. What has not been clearly articulated—in either the presentations of this conference—or the Tiedeman projection—is the role to be taken by vocational teachers in the total process.

TOPIC TWO: New Vocational Curriculum Programs

Vo-Ag Curriculum Change

0:4 "A DETERMINATION OF NEEDED ADJUSTMENTS AND EXTENSIONS IN THE CURRICULAR PATTERNS OF VOCATIONAL EDUCATION IN AGRICULTURE" BY ROBERT E. TAYLOR. THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO. (PROJECT = 5-00311) 1966. ERIC = ED 010 497. MF $0.18 HC $4.12. 93 PAGES.

Agricultural educators have recently pointed out that agriculture and farming are not synonymous. Broader agricultural businesses and services have evolved to assist the farmer and rancher with production. Consequently, leaders in agricultural education have undertaken an extensive research program to identify workers who require a knowledge of agriculture to perform their jobs successfully and to identify the major agricultural competencies they might need.

This project represents a national effort to modify curricular offerings. Its purpose was to "determine the adjustments and extensions needed in high school and post-high school curricular patterns of vocational education in agriculture to more effectively meet preparatory training needs in off-farm agricultural occupations. The summarization, interpretation and resulting synthesis of the studies on agricultural occupations completed by [illegible] provided the basis for determining needs and adjustments in competencies needed by workers in these occupations.

3. Cluster the major agricultural occupations which require similar competencies.

4. Develop and refine the curricular guides and supporting materials which were most needed and feasible for the major clusters of agricultural occupations.

5. Examine the data from the studies on agricultural occupations for other implications, giving particular attention to: (a) programs for disadvantaged youth; (b) projected employment opportunities in major agricultural occupations; (c) needed adjustments in administrative and supervisory procedures; (d) organizational structure for providing vocational education in agriculture; (e) needed adjustments in teaching and coordinating methods; (f) preservice and inservice education of teachers; and (g) selection, placement and follow-up of students.

6. Train key state leaders in the use of curricular guides and supporting materials.

The first advisory committee met in January 1965 to make recommendations to the task force. The conferees considered 18 specific questions providing a summarization of employment opportunities and the direction to be taken in the development of curriculum materials.

[illegible]

2. *Agricultural Supply-Sales and Service Occupations.* A two-year program for eleventh and twelfth grades at the skilled level, and a post-high-school program for the skilled, extending over several years.

3. *Agricultural Machinery-Service Occupations.* A post-high-school cluster of training needs for five different occupational titles, extending over several years.

4. *Agricultural Chemicals Technology.* A two-year, post-high school program in community colleges at the technical level.

For the development of instructional materials, the task force conducted a nationwide search to identify capable personnel, visited and evaluated successful programs, analyzed and developed materials. The emphasis was on competencies identified as necessary for successful job performance.

Another advisory meeting, held in March, provided specific direction and established channels of communication between persons in education and persons representing different power structures in agricultural businesses and industries.

In April, a national advisory committee met to give direction to the development of educational programs. Its members stressed the needs for more programs at the post-high school level, assistance by local or area advisory councils, adequate vocational [illegible] and greater [illegible]

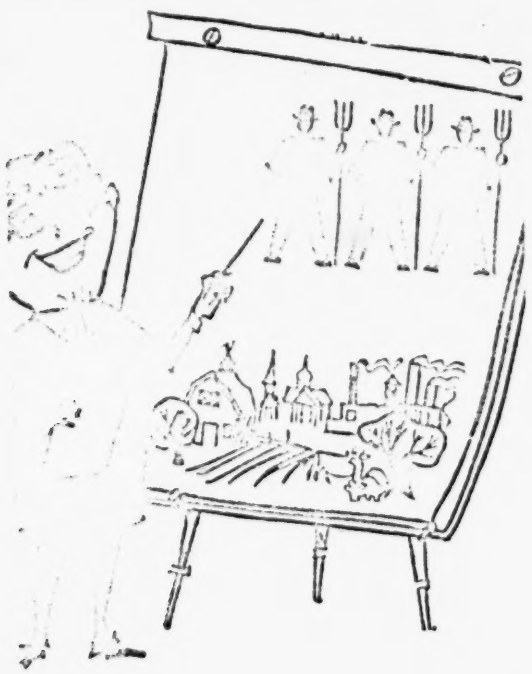
farm agricultural occupations for teacher educators and state supervisory personnel. They presented an outline for developing new programs, showed the need for such programs and presented preliminary materials. It became clear that developing competency in off-farm occupations requires a complete coordinated program of education.

Following the national conference, area meetings focused on the responsibilities and activities which local school administrators, boards, vocational coordinators, vocational teachers, and lay personnel could undertake to determine needs for initiating programs at the local level.

The major objectives of the project were accomplished through the specialized publications developed to: provide information to laymen, employers, and for use by mass media; assist state-level policy-making bodies and administrators in launching new programs; provide teachers with materials to assist them in organizing and conducting new programs, and report research findings for guidance purposes.

Listed in the report are the titles of publications intended to assist educators in developing programs and curricular materials. Among the listed materials are outlines for instructional modules designed to help teachers develop courses in agricultural machinery, agricultural supply, horticulture and agricultural chemicals technology.

The project was first evaluated by participants at the May conference. Evaluation sheets were sent out with the curricular materials previously reviewed by specialists. Pilot programs using the materials were judged. Finally, an overall evaluation was conducted by a National Seminar on Evaluation and Program Planning in Agricultural Education.



It was felt that the strengths of the project were: (a) states were given assistance in their studies; (b) area meetings, emphasizing the development of local and area pilot programs, permitted involvement at the action level; (c) qualified persons from other disciplines, business and industry were invited to lend assistance and prepare specific materials, and (d) interstate cooperation was encouraged.

I. A. Curriculum Project

6:5 "AN INDUSTRIAL ARTS CURRICULUM PROJECT FOR THE JUNIOR HIGH SCHOOL." BY EDWARD R. TOWERS. OHIO STATE UNIVERSITY, COLUMBUS, OHIO. (PROJECT # 5-0059) 1966. (VT # 003-145) 37 PAGES.

This report represents the first phase of a continuing project to study the Industrial Arts curriculum. The problem statement includes the comment that "Many of the traditional approaches to industrial arts education are incapable of providing students with an adequate understanding of the impact of industry upon our modern man-made world and upon industrial personnel."

Blocks to developing a new program in Industrial Arts are stated to be:

1. Failure to develop a fundamental structure of the field.

2. Absence of textbooks and other instructional materials.

3. Lack of appropriate laboratory facilities and equipment.

4. Scarcity of research and demonstration projects.

5. Outmoded teacher education programs.

"These blocks to curriculum improvement call for a comprehensive project which will rigorously define content; develop a package of teaching materials; field test, demonstrate and disseminate these materials; and organize teacher education programs. Through the procedures subsequently delineated, this project will make possible a fundamental breakthrough which can provide a powerful thrust on the national scene."

The general purpose of the Curriculum Project is to effect curriculum change in Industrial Arts. The two objectives for this phase of the project are:

1. To conceptualize a structure of industry as a basis for content in Industrial Arts.

2. To translate this structure into a syllabus which outlines a junior high program in Industrial Arts.

"In order to accomplish these objectives, it was necessary to develop a rationale for conceptualizing a structure of industry and a rationale for selecting learning experiences from a structured body of knowledge. Subsequent phases of the project will require the syllabus to be engineered into an innovation package."

The application of PERT (Program Evaluation and Review Technique) was used in planning the first phase of the project. The project staff began with a comprehensive literature analysis and the production of an annotated bibliography.

During the review of various industrial classification systems, such as the *Dictionary of Occupational Titles, The Standard Industrial Classification Manual* and the *Census of Manufacturers*, the project staff began developing a set of criteria for determining structure. These criteria involved scope, limitations and sequence.

Consultants were employed to assist the staff in these activities. Selected to provide an interdisciplinary approach to the "conceptualization of the structure," the following fields were represented: philosophy, sociology, psychology, economics, physical science, engineering and industrial management, labor and business.

After a structure had been organized within which the major concepts were placed in taxonomic order, the next step involved development of a syllabus for the junior high school. Six factors were identified which were to provide guidelines for the selection and organization of learning experiences:

1. The Structure of the Body of Knowledge.

2. Desired Behavioral Change or Objectives of Instruction.

3. The Nature of the Learner.

4. School Facilities and Materials.

5. Instructional Procedures and Materials.

6. Measurement and Evaluation.

In order to "conceptualize" a body of knowledge contained in industrial

technology, a three-dimensional matrix approach was devised, the axes of which are Industrial Material Goods, Industrial Production Technology, and Industrial Management Technology.

The report states that the matrix approach provides a way of looking at the multiple dimensions of industrial technology. "The matrix approach may be equally helpful in the conceptualization and certification of other techniques." The rationale for the inclusion of a study of industrial technology in the school program suggests that these other technologies (e.g. marketing, transportation and health) should also be studied in the school program.

Curriculum Development

The Ohio State Industrial Arts curriculum project represents a systematic approach to curriculum development that should do much to broaden the scope of industrial arts teaching. The syllabus which will be developed from such inquiry will be of general interest as to both the methodology used in its construction and its implications for the junior high school Industrial Arts program.

Among the six factors named for the selection and organization of learning experiences is one that needs to be given constant emphasis. This is *The Nature of the Learner*—in this case, the junior high school student. Any realistic curriculum plan must begin and end with these active, restless, inquisitive, and impressionable young people who love to feel, form, construct, create, experiment, and explore. Therefore, it may be reasonable to ask for multi-dimensional studies of curriculum in which the students involved, their qualities, capabilities, needs, and desires are considered in the basic structure of experimental design.

Television Instruction for Youth

6:6 "Project Notify—Needed Occupational Television Instruction for Youth" by William H. Lawson and John Bancroft. San Bernardino Valley College, San Bernardino, Calif. (Project #5-0063) 1966. ERIC # ED 010 641. MF $0.13 HC $2.63. 67 pages.

Job selection is a difficult problem for career-oriented students. Students should receive adequate information but, as the report states, in many cases the information available is not helpful because of the scarcity of qualified counselors, lack of a central source of information, dull methods for presenting the information, and rapidly changing job requirements. This report is concerned with the use of television to provide occupational information.

Television is probably the primary source of entertainment and informal education for today's youth. Because television engages the senses and directly involves the viewer in actual situations, the authors felt that it could be effective in disseminating information. Project Notify, a pilot program, produced "dramatized documentaries" concerned with career-ladder opportunities. The project, employing amateur actors who played themselves at their jobs and filming programs at local firms, provided a sense of immediacy and realism.

The purposes of this study were to report on Project Notify, determine the effect and appropriateness of Project Notify as a means of disseminating occupational guidance information to high school students, and make recommendations for effective utilization of Project Notify video tapes.

Four Objectives

The specific objectives of the project were to:

1. Provide occupational information for high school and junior college students, particularly those from low income or educationally deficient groups. The long-term desired result was a decrease in the rate of unemployment and underemployment resulting from poor job selection and dropping out of school.

2. Provide counselors, advisors, teachers, parents, and friends of students with detailed information on the career opportunities in specific occupational families that are currently available in their local metropolitan areas.

3. Inform disadvantaged minority groups of the new and varied opportunities that are now possible in the local business community.

4. Develop and expand a new vocational education tool in the form of occupational guidance through educational television.

The following occupational areas were selected because they are available in major metropolitan areas, offer equal opportunities, offer additional training and are relatively immune to change: (a) Secretarial, (b) Food Retailing, (c) Department Store Retailing, (d) Automotive Technology, (e) Lodging and Food Service, (f) Financial Institution, and (g) Law Enforcement.

The television programs were designed to identify entry-level jobs in the above occupational areas. Career opportunities, means of preparing for advancement, and participation of minority group members were portrayed.

Evaluation was conducted using eleventh and twelfth graders attending eight senior high schools in the San Bernardino Valley College district. Three data-gathering instruments were used: two to gain information from students, and one to elicit responses from the project counselors. Comparable items were included on all questionnaires. After each program, students were given an inventory questionnaire for an initial evaluation. A selected sample of 15 percent of the students who viewed the programs were involved in structured interviews.

Later, a stratified sampling by program and school was conducted to select students for follow-up interviews one or two months after viewing, in order to determine the long-range value of programs and to obtain the students' comments and suggestions.

Student Selection

A portion of the project was designed to assure that consistent procedures were followed in the selection of students, viewing procedures and evaluation techniques. Unfortunately, a few counselors selected students based on a preconceived idea of the aptitude level needed for an occupation. Most of the students were already vocational-oriented. Few college-bound students attended the viewing. Counselors had been asked to select students enrolled in courses related to the area to be viewed. They were also requested to refrain from selecting students for whom employment in a particular area seemed unlikely.

No use was made of control or opportunities for statistical comparison. It was assumed that students could not have had an opportunity to gain information through any other school experience.

Students and counselors found the video tapes a valuable source of in-

formation. The students' evaluations based on responses made immediately following the program compared favorably with those made one or two months after the viewing. The students gave the highest rating to those programs that presented a development of facts, a moderate rating to those encouraging the students to stay in school, and a low rating to those related to job planning.

The programs were found to be more beneficial to disadvantaged minority groups in acquainting them with job possibilities. School principals also found the programs effective, although they suggested a need to supplement the tapes with guest speakers or informed instructors.

Trends Revealed

The study revealed several trends:

—There is a strong demand for occupational information by students seeking careers.

—Occupational projections on a short-term basis are difficult to obtain from firms and industries.

—Educational television in the elementary and secondary school systems is handicapped by the lack of equipment and technicians. Scheduling of programs can be difficult because of differing "bell" systems. It is costly for schools to own their own video tape equipment.

The report made the following recommendations:

1. All television scripts should be reviewed by U.S.O.E., and resources should be made available to improve them.

2. Programs should be reduced to two or three occupational families, with greater concentration in each area.

3. Existing tapes should be made available to everyone interested.

Significance of Report

Because evaluation procedures of this study were somewhat crude, the significance of the report is tenuous. Educational television may certainly be valuable in disseminating occupational information but, as the report suggests, its effectiveness may be diminished by continued use. This implies that television now commands attentiveness in the classroom because it is a novelty.

The report claims that educational television has been found to be as effective as conventional classroom instruction. As the school principals involved in the study stated, television is an appropriate jumping-off point as a technical aid, but it cannot replace the teacher.

Skills in Sales

6:7 "A Process for Determining Vocational Competencies for the Performance of Nine Essential Activities for Sales Personnel in the Feed Industry, and the Loci at Which the Competencies Could Be Taught" by James J. Albracht. Michigan State University, East Lansing, Mich. (Project # 5-0156) 1966. ERIC # ED 010 070. MF $0.27 HC $5.96. 149 pages.

The major emphasis of this project was on the development of a process for determining vocational competencies for sales personnel in the feed industry. Forty vocational competencies were identified and submitted to a jury of 21 experts to determine whether they were needed for the performance of nine essential activities.

Jury members were selected from four occupational groups having to do with the feed industry. There were Sales Training Directors, Feed Dealers, Agricultural Teacher Educators, and Office Education and Distributive Education Teacher Educators. In the vocational agriculture North Central Region of the United States, six members were chosen from each of the four groups.

The process developed and used in this study incorporated the following factors:

1. Use of an "industry function" approach rather than the traditional "job title" approach.

2. Inclusion of all vocational education competencies involved in the performance of a function rather than only those competencies which might be taught by one of the vocational service areas.

3. Use of a regional survey approach rather than the traditional local survey approach.

4. A team approach of industry leaders and vocational educators in determining which competencies are needed, and the loci at which the competencies could be taught.

The overall objectives of the study were to:

1. Identify and verify the sales activities performed by personnel in the feed industry, and to rank the activities as to their relative importance to the feed industry.

2. Identify and verify the competencies necessary to the performance of the sales activities in the feed industry.

3. Determine the loci at which the sales competencies could be taught.

On the basis of previous research, nine functions in the feed industry were identified. The functions were sales, service, processing, transportation, office service, research, public relations, purchasing, and maintenance.

Sales Functions

A list of 28 activities by personnel for the performance of the sales function was submitted to a jury of 12 persons recognized as experts in feed-industry sales. The jury indicated whether or not the activities were performed in the sales function and ranked nine selected activities for their relative importance on a five-point rating scale. These nine activities were to:

1. Assist farmers in planning feeding programs and troubleshoot their feeding problems.

2. Assist local dealers in promoting the use of specific feeds by local producers.

3. Sell direct to the producer.

4. Assist the producer to see through his own problems by reviewing with him his own situation.

5. Follow up results obtained by customers and report them to management.

6. Sell directly to customer across the counter in an informative manner without misrepresentation.

7. Solicit local dealers to sell company's products.

8. Recognize abnormal and detrimental practices and animal health conditions.

9. Assist local dealers in promotional campaigns and feed-and-grain clinics held for livestock feeders.

The major steps in the development

of the instrument used for the study were:

—Preparation of the list of competencies.

—Consultations with representatives of both the university and the feed industry to refine the list of competencies.

—Personal interviews of the trial juries to refine further the list of competencies.

An interview schedule was developed by listing the competencies that might be required for the performance of Activity One, then adding any additional competencies that might be involved for the performance of Activity Two, and so on, through the list of nine activities. Additional competencies were identified through a review of agricultural and business education textbooks, and consultation with college representatives. A preliminary interview instrument of 62 competencies was developed. After a period of trial-testing and revision, the instrument was reduced to 40 items. These were then evaluated and rated by the jury.

Included in the summary of findings of this study is information that 21 competencies were identified as essential for the performance of each of 9 sales activities in the feed industry, and all 40 competencies were considered essential for the performance of more than one activity.

It was recommended that the process involving the four factors used in this study could be used for studying other functions in the feed industry and functions in other industries. It was further recommended that competencies and loci could be considered in the development of curricula and courses of study.

Although the focus of this investigation is on sales and distribution in agriculture, it has implications for persons associated with the other divisions of vocational education.

Groundsman-Gardener Training

6:3 "GROUNDSMAN-GARDENER FOR SPECIAL CLASS STUDENTS (EDUCABLE MENTALLY RETARDED YOUTH)" BY G. ROY NICOLAYSEN. OAKLAND UNIFIED SCHOOL DISTRICT, OAKLAND, CALIF. (PROJECT # 5-0178) 1966. ERIC # ED 010 230. MF $0.09 HC $1.32. 39 PAGES.

The objective of this project was to train mentally retarded students in the

Groundsman-Gardener field and for placement in the Landscape-Nurseryman Aide Course and/or enrollment in post-graduate Groundsman-Gardener training.

The vocational goals of the project were:

—Job training and placement of Educable Mentally Retarded students.

—Absorption of Educable Mentally Retarded students into the regular-class Groundsman-Gardener program.

—Part-time employment of Educable Mentally Retarded students.

—Continued training as Department of Vocational Rehabilitation clients.

Eleventh and twelfth graders enrolled in special classes at the Oakland Senior High Schools were asked to participate in a pilot summer program for Groundsman-Gardener activities. One unit of elective credit was offered to participants, as well as a daily training allowance for their work. Sixteen students enrolled and completed the six-week course as clients of the Department of Vocational Rehabilitation.

The course was divided into classroom study and actual work experience in the field. The classroom curriculum was designed to meet the academic abilities of the students and included six areas of interest. (The curriculum outline is reported in the Appendix.) Students kept notebooks on horticulture which were graded at the end of the session. Classroom activities in the morning consisted of lectures, observation, audiovisual materials, and elementary research.

In the afternoon, a planned program of work experience was conducted at a nearby, poorly maintained recreation and park area. Students were divided into teams for the projects of pruning, trimming, grubbing, hoeing, planting, and watering. The teams rotated so that each student became acquainted with these various skills.

The report stated that the vocational goals of the project were realized. Specific vocational training objectives were met in the instruction and student performance of gardening tasks.

All agencies and the community were satisfied with the summer activity. Most of the students enrolled expressed their intentions of continuing in this field in some capacity.

Curriculum planning by specialists in Mental Retardation and by technical advisers in the field of horticulture, together with close supervision of activities, contributed to the success of the program. There were no dropouts and very little absenteeism; a high level of enthusiasm was sustained.

The study recommends that this program be continued and expanded, so as to offer opportunities to more students.

The Cluster Concept

6:9 "AN INVESTIGATION AND DEVELOPMENT OF THE CLUSTER CONCEPT AS A PROGRAM IN VOCATIONAL EDUCATION AT THE SECONDARY LEVEL (PHASE I)" BY DONALD MALEY. UNIVERSITY OF MARYLAND, COLLEGE PARK, MD. (PROJECT # 5-0183-A) 1966. ERIC # ED 010 301. MF $0.27 HC $5.40. 135 PAGES.

This project, Phase I of a series of studies, was initiated to study the cluster concept as a form of secondary vocational education. The initial phase was aimed at determining the acceptability and feasibility of the cluster approach, as well as identifying several occupational clusters. The final section, not contained in this report, is directed toward developing a series of course outlines for selected clusters.

The term, "cluster concept," is described as the development of skills and understandings related to a number of allied fields. The skills and understandings would be common to a number of the occupations in the field. However, it is not an in-depth development into any one job. The "cluster concept" differs from the conventional vocational programs in terms of scope and depth, preparing a person to enter into a family of occupations rather than a specific occupation.

The first objective was to determine the appropriateness of the cluster concept as a program in vocational education at the secondary school level.

Four procedures used to answer this question were:

1. An extensive search of literature in the areas of education, labor, economics, and industry.

2. A series of interviews with representatives of industry, education and labor conducted to ascertain the acceptability and feasibility of the cluster concept program.

3. A continuous dialogue with these representatives in order to obtain perspective and a broad reaction.

4. An analysis of the data obtained from the interviews and the review of literature to determine the need, acceptability and feasibility of the cluster concept.

The second objective was to identify occupational clusters and the specific occupations in each cluster that would be suitable for a cluster-concept program in vocational education at the secondary school level. To satisfy this objective, three steps were taken:

1. A review and evaluation of research was conducted in the area of occupational grouping.

2. A method of research, based upon a sampling technique proposed by Altman and Gagne of the American Institutes for Research, was developed to determine occupational clusters.

3. A group of three occupational clusters, with their respective selected occupations, was identified for further analysis.

Among the findings of this investigation, based primarily upon the responses to interviews, was the indication that the cluster concept was feasible and could be implemented in the secondary schools with little difficulty. "Representatives from labor and industry indicated that students with a cluster concept background could obtain employment and would be able to advance and specialize through on-the-job training and apprentice programs."

After reviewing several occupational classification systems, the investigators concluded that the occupational clusters could best be developed from a list of criteria. Criteria were established for the purpose of identifying occupational clusters and their specific occupations. These criteria indicated that the occupational clusters should:

1. Lie in the area of vocational industrial education.

2. Include occupations that are related on the basis of similar processes, materials and products.

3. Be broad enough to include occupations having a wide variety of skills and knowledge.

4. Involve occupations that require not more than a high school education and/or two years beyond high school.

5. Provide the opportunity for mobility on a geographical and occupational basis.

The occupations in each cluster must have:

1. A favorable employment outlook.

2. The instructional capability of being implemented in a secondary school program.

3. Opportunity for job entry upon graduation from high school.

4. Numerous skills and knowledge providing opportunity for the identification of commonalities with other occupations.

5. Opportunities for advancement through further schooling, on-the-job training or apprentice programs.

As a result of applying the criteria to a group of possible occupational families and specific occupations within the groupings, the following clusters with their respective occupations were established:

Electro-Mechanical Installation and Repair Cluster: (a) business machine serviceman, *(b) radio and television* serviceman, (c) home appliance serviceman, (d) air conditioning and refrigeration serviceman.

Metal Forming and Fabrication Cluster: (a) welder, (b) sheet metal worker, (c) machinist, (d) assembler.

Construction Cluster: (a) carpenter, (b) plumber, (c) mason, (d) electrician, (e) painter.

Changes in Shorthand

6:10 "CHANGES IN GREGG SHORTHAND SIMPLIFIED AS WRITTEN DURING EMPLOYMENT: AN ANALYTICAL STUDY OF VARIATIONS IN A PHONETIC SYSTEM OF COMMUNICATION" BY RUTH HILKERT GAFFGA. NEW YORK UNIVERSITY, NEW YORK, N.Y. (PROJECT # 5-8270) 1966. ERIC # ED 011 076. MF $0.18 HC $3.20. 80 PAGES.

The purpose of this study was to investigate variations from Standard Gregg Shorthand in the Simplified Edition, after use in employment, to determine relationships of variations to principles and procedures, and to determine implications of these relationships for making modifications.

Samples of Gregg Shorthand Simplified already written were collected only from notebooks used on the job in order to obtain the shorthand as written in common usage. Written samples were collected only from persons who had studied Simplified Shorthand and who had received at least two years of instruction.

Local samples were collected by the investigator; a national collection was made by mail with the aid of the Administrative Management Society. Some 285 samples containing an estimated 166,725 outlines and representing 203,205 words were collected and transcribed. Ultimately, 242 samples were used for purposes of the study.

The first 25 samples collected were set aside and studied as a preview to determine how many variations might be located, their characteristics, why they seemed to occur, and what in general might be expected of the main body of samples.

A collection of the largest number of samples was organized by dividing the country into geographical areas. This was planned to serve two purposes: to supply a source for national data, and to compare local samples with those from other national areas.

Nine shorthand experts reviewed the collected materials. They were lecturers, writers of college and secondary texts, college and State Education Department personnel, and chairmen of high school departments of Business Education.

The experts worked individually in three different groups, some serving in two of the groups. Group I approved the list of kinds of variations as important to Simplified theory. Group II sampled the raw data and agreed that the variations were located accurately and completely. Group III, which was comprised of outstandingly well-qualified experts, reached agreement without difficulty on the investigator's interpretations of the data.

Nine kinds of variations were studied, as follows: (a) use of left and right "s"; (b) confusion of "o" and "oo"; (c) circle vowels ("a" or "e") between opposite curves; (d) circle vowels ("a" or "e") in relation to straight strokes; (e) use of "-ings"; (f) "-ith" joining and its misuse; (g) representation of the word ending "-ther", and (h) past tense "-ed," "-ded" and "-t", and (i) treatment of amounts and quantities.

From the analysis of variations to

Gregg Simplified Shorthand seven overall conclusions were derived, which are listed here in abbreviated form:

1. Although certain key elements in Gregg Shorthand Simplified were not followed accurately, shorthand writers did write essentially plain shorthand during employment.

2. Where shorthand writers did not use Standard Simplified Shorthand, Diamond Jubilee was employed.

3. The shorthand writers who were on the job generally used text shorthand.

4. Speed was not a decisive factor in the number of variations written during employment.

5. Gregg Shorthand Simplified was written with no essential differences by shorthand writers during employment throughout the country.

6. Shorthand theory is in the process of changing, very much as a written language changes, to meet the needs of shorthand writers.

7. What is learned stays essentially learned, and it therefore behooves teachers to be aware that aspects of learning situations will stay learned.

Future Goals

Following are the recommendations for further study:

—Devise a Gregg Shorthand system with no choicemaking in the writing of any individual shorthand outline, such as left or right "s," over or under "-ith," and "o" and "oo" hook; and test experimentally with a control group to see what the results are. (The everyday business office situation is not appropriate for technical and accurate testing.)

—Determine the frequency of cases of sounds per 1,000 words for all kinds of variations from Gregg Shorthand text principles and procedures.

—Study the importance of variations from Gregg Shorthand principles and procedures when dictation is given at varying speeds.

The New York University investigation of variations in Gregg Shorthand Simplified should be of particular interest to teachers and supervisors of Business Education, as well as to college and State Department instructional and supervisory staff members. In addition to the information reported, several charts and tables and a selected bibliography are presented.

Stenography Course Development

6:11 "DEVELOPMENT AND EVALUATION OF A ONE-SEMESTER STENOGRAPHY COURSE" BY PATSY BLAKE MCMURTRIE. SAN FRANCISCO STATE COLLEGE. SAN FRANCISCO, CALIF. (PROJECT = 5-82279 1966. ERIC = ED 010 256. MF $0.25 HC $1.40. 92 PAGES.

The purpose of this San Francisco State College study was to design a new scope and sequence of shorthand and transcription instructional materials to fit a one-semester stenography program, and to evaluate these materials as a pilot study on three levels—high school, adult education and college.

The first step was the development of instructional materials. It was decided that a package of materials would include a textbook, tapes, transparencies, four-minute film clips, and the basic instructions for teacher use of an overhead projector. Five guidelines were used in the preparation of these materials:

1. It would be based upon the writing principles and theories of Gregg shorthand.

2. It would be a teachable course, adaptable to the needs of average and talented high school, adult education and college students.

3. It would be flexible enough to provide techniques for maintaining the interest of an average class, yet allowing and furnishing challenging work for talented students.

4. It would teach the necessary processes required to write and transcribe shorthand.

5. It would teach these processes by leading the students through simplified examples of the theoretical applications of writing and transcribing shorthand.

The second step of the project was to test and evaluate the course for soundness of design and conception. Experimental teaching with classes in high school, adult school and senior college was undertaken to determine the effectiveness of the course and to determine the feasibility of this proposed approach to teaching a one-semester stenography course.

The three schools participating in the project were the John Adams Adult School, San Francisco State College and El Camino High School, all in the San Francisco area.

It was reported that the findings led to the conclusion that the combination of the Writing of Shorthand and Beginning Transcription can be taught within the generally accepted one-semester time interval.

It was further indicated that the most important implication of the study was that MDTA adult students, from various types of backgrounds and with few or no prior educational successes, were able to orient much of their thinking and attitudes toward finding a place for themselves in the job market.

"It seems very likely that the Shorthand Structured Learning Program gave them a needed realistic approach to learning stenographic skills."

Technical Education Curricula

6:12 "A STUDY OF RECOMMENDATIONS FOR TECHNICAL EDUCATION CURRICULA" BY JOSEPH P. ARNOLD. PURDUE UNIVERSITY, LAFAYETTE, IND. (PROJECT = 5-83710 1965. (VT = 003-520) 12 PAGES.

The report asserts that there is a need for recognizing, identifying and relating the functions of technicians in industry to those curricula which would best assure occupational competence. This study sought to identify the attitudes of technically qualified management personnel toward the post-high school technical curricula. It was stated that these respondents from management, who had direct responsibility for job performance of technical personnel, had some technical background themselves, and they were assumed to have a higher degree of knowledge and concern for company objectives and policies.

The purposes for which this study was conducted are to:

1. Compare assessments made by management toward technical curricula content with assessments made by technical personnel themselves.

2. Isolate and analyze selected variables and measure their relationship to curricula recommendations.

3. Establish and assess the degree of relationship between level of authority of management and generality of recommendations for curricula content.

4. Identify a core of courses which management agrees is desirable for most post-high school technical programs.

5. Test the hypothesis that, in its recommendations, management will include more kinds of course content than will technicians.

Technicians were used as the criterion group of respondents. Engineering and scientific technicians were defined as those employed in research, design or development, production, operation or control; or in installation, maintenance or sales. Management and or supervisory personnel were used as respondents. Those in management were employees three steps above who were responsible for at least one technician.

Illinois Firms Selected

The initial portion of the sample of firms was randomly selected from manufacturers in Illinois. Fifty-two firms were finally chosen, each employing 200 or more persons, and each supplying up to four respondents.

An interview schedule and a curriculum deck were the two instruments used in the study. Each technician and each management respondent was interviewed. The curriculum deck consisted of 99 index cards containing all subjects or course content related to a technician's job performance.

One technician from each firm sorted the deck into three stacks in terms of degree of relatedness to his own job. Each management respondent sorted the cards in terms of degree of relatedness to the job of technicians in his firm. In all, there were four sets of responses to each technician job—from the technician, his direct supervisor, his second level supervisor, and the department head, chief engineer or a person three steps removed.

Experimental data, comprising responses to the curriculum deck, were used in analyses or comparisons of curriculum recommendations and for the establishment of cores of recommendations described in the objectives. A system of job families was established for the classification of respondents.

The job families were: Electro-Mechanical, Mechanical, Chem-Mechanical, Chemical, and Chemical-Foods. The core of curricula recommendations was identified as agreed upon by respondents of all five job families. Individual cores by job family were then identified, which were intended to include the differentiated content for a given job family, in addition to the general core.

Conclusions Drawn

Among the conclusions drawn from this study are:

—The implications of the study are greatest in the Mechanical family of occupations.

—Findings from the other four families may not be capable of being generalized to technicians in each of these areas.

—Several technician jobs appear as "hybrids." If these types of jobs are increasing or changing, there is a need for a systematic identification of the change.

—Programs of study to prepare technicians must provide subject matter and skill development in areas consistent with occupational requirements.

A close similarity in recommendations among groups was indicated. Core recommendations represented the collective views of management and technician respondents. Cores are recommended for use as guidelines in design and refinement of post-high school technical programs.

Building Design Seminar

6:13 "MATERIALS AND STRUCTURAL DESIGN SEMINAR FOR VOCATIONAL-TECH SCHOOLS" BY J. CLARK DAVIS. UNIVERSITY OF NEVADA, RENO, NEV. (PROJECT # 7-0653) 1967. (VT # 004-1660). 113 pages.

The three-day vocational-technical facility planning conference at Las Vegas, Nev., had 121 participants and 16 conference consultants and planners. The report includes greetings by Lt. Gov. Ed Fike and by Burnell Larson, State Superintendent of Public Instruction; a keynote address by S. J. Knezevich, Associate Secretary, American Association of School Administrators, and four presentations on vocational facilities design.

Fike's opening remarks called attention to the paradox of chronic unemployment in a time when many skilled craft and technical jobs remain unfilled.

"There are two basic elements which have a direct relevance to the importance of vocational education. First, there is virtually no future for the unskilled worker. What has traditionally been his job is going to be done by automatic machines. . . . The second element is the fact that our potential capacity for economic growth depends on the entire work force being prepared for the jobs that will be available."

An important point made in Knezevich's address was the idea that a one-shot, limited approach to vocational plant design should give way to a longitudinal and developmental concept. "Rather than compromising all spaces to less than adequate specifications it might be appropriate to consider vocational-technical schools in terms of phases with specific parts scheduled for construction over relatively long periods of time. Another very important part of this concept is that a truly dynamic vocational-technical program will require modifications and expansions in the years following initial construction."

When speaking of the systems approach to school construction, John Boice of the School Plant Planning Lab, Stanford University, stressed the importance of trying to project into the future, rather than copy school plant and curriculum designs of the past.

"The program requirements given to the architect three years in advance may not even have relevance for the proposed program on the day the building opens. . . . What is clearly needed are spaces that can quickly and inexpensively be adapted to changes in programs and teaching methodologies."

Harris Sharp of the Architect-Engineering Office, Zick & Sharp, made a presentation on the "Integrated Ceiling." He called attention to the fact that the ceiling is actually more important than the walls in determining the flexibility of a building.

"In the plenum space—that is, the space between the closed ceiling itself

and the roof area - we can run all of our heating, air conditioning, lighting ducts, and other utilities. They can be moved and they can be reached very easily if laid out in a truly integrated system. It also offers a big utility space that covers the entire structure, where in the future we can run closed circuit television along with many other innovations to aid teachers that may not even be in existence today."

Also contained in this report are transcripts of 31 questions and answers relating to the Southern Nevada Vocational-Technical Center, a description of the construction and architectural features of the Center, and presentations of thermal environments and educational models. This report contains a number of concepts and specific ideas that would be valuable to any persons concerned with the design and construction of facilities for vocational-technical education.

TOPIC THREE: Development of Programed Learning and Materials for Other New Forms of Educational Media

Programed Instruction

6:15 "THE RELATIVE EFFECTIVENESS OF SUPPLEMENTING PROGRAMED INSTRUCTION WITH BLOCKED VERSUS SPACED REVIEW" BY JAMES A. SCANLON. CORNELL UNIVERSITY, ITHACA, N.Y. (PROJECT # 7-33063) 1967. (VT # 002-339) 16 PAGES.

Programed instruction has become the most popularized, though still controversial, new medium. Much of the controversy is over the proper use of this technique. Is it designed to replace normal classroom instruction? If a program is used and if the program alone does not fulfill the teacher's objectives, how can it best be supplemented? This study is the report of an experiment designed to determine the effectiveness of supplementing programed instruction with blocked versus spaced review. Simply defined, blocked review is used at the end of a program or unit, while spaced review is incorporated into the learning task at various regulated intervals.

The four hypotheses tested were:

1. Students who have programed texts supplemented with review will learn more than those who have only programed texts, as measured by a test for learning administered immediately after the instructional period.

2. Students who have programed texts supplemented with spaced review will learn more than those who have programed texts supplemented with blocked review, as measured by a test administered immediately after the instructional period.

3. Students who have programed texts supplemented with review will retain more than those who have only programed texts, as measured by a test for retention administered after 30 days.

4. Students who have programed texts supplemented with spaced review will retain more than those who have texts supplemented with blocked review, as measured by a test administered after 30 days.

The experiment was conducted in a series of 10 steps. The program selected pertained to the subject, Parliamentary Procedure, taught in Vocational Agriculture at the ninth-grade level. A film strip was finally selected as the best means for review procedure. The film strip constructed included only the factual information covered in the programed unit. A criterion test was also developed to measure how much the student had learned at the end of the program and how much he retained 30 days later.

Three hundred fifty ninth-grade students enrolled in vocational agriculture in New York were chosen at random for this experiment. Twenty-nine teachers in 23 schools were also involved. Each student was tested for reading ability, by use of the Nelson-Denny Reading Test. Then the classes were assigned to three treatment groups—those receiving blocked review, those given spaced review, and those receiving no supplementary review. After the completion of the programs and after the criterion test was administered, scores were punched on IBM cards and analyzed.

Neither of the groups receiving supplementary review learned more than the group having no review. The group receiving blocked review did better than the one which had spaced review. Hypotheses 3 and 4, concerned with retention, were also rejected.

These findings led to the following conclusions:

1. Supplementing a program with either spaced or blocked review has no effect on either learning or retention.

2. Supplementing a program with blocked review will result in more learning than supplementing it with spaced review, although blocked review does not produce a beneficial effect in retention.

Although the findings do not support the hypotheses of this experiment, the study recommends that programed instruction be supplemented, preferably with spaced review. This recommendation was made because of the sound theoretical framework of the experiment and because no other studies support its negative findings. Consequently, additional research is needed in this area.

This fundamental study in learning theory is of value to *all* teachers seeking new methods of instruction.

TOPIC FOUR: Programs for Evening and Part-Time Schools (No Studies)
TOPIC FIVE: Emerging Programs Beyond High School

Electronics Content Analysis

6:16 "A COMPARATIVE ANALYSIS OF ELECTRONIC CONTENT IN PUBLIC POST-HIGH SCHOOL TECHNICAL INSTITUTES AND ELECTRONICS TECHNOLOGY REQUIREMENTS OF INDUSTRY" BY RICHARD J. VASEK. MISSISSIPPI STATE UNIVERSITY, STATE COLLEGE, MISS. (PROJECT # 6-8390) 1967. (VT # 004-005) 93 PAGES.

This Mississippi State University study was undertaken to ascertain the extent to which post-high school technology programs, through electronic content offerings, were meeting industry's needs in electronics technology. The research was conducted in U. S.

Office of Education Region IV, which includes Alabama, Florida, Georgia, Mississippi, South Carolina, and Tennessee.

It was determined that 223 industrial firms and governmental agencies in the region studied were employers of electronic technicians. These employers were sent a checklist of 435 items of electronic instructional content. They were asked to indicate whether they believed the various items were required, preferred or unnecessary knowledge. A total of 175 firms, employing 15,323 electronic technicians, responded. Of the 435 content items, employers indicated that 20.5 percent was required knowledge, 77 percent preferred, and 2.5 percent unnecessary.

A similar instrument was sent to 63 electronics instructors. They were asked to indicate whether they taught the various content units in depth, discussed them briefly, or did not teach them. Responses from 53 instructors indicated that 72.6 percent of the items were taught in depth and 27.1 percent were discussed briefly.

A total analysis revealed that electronics instructors placed significantly more emphasis on basic electronic content taught than industrial personnel indicated was necessary. Specifically, the following conclusions were reached:

—Eighty-nine instructional units considered "required" by industry were taught in depth.

—Some 227 units were in the category "industrially preferred" but were taught in depth. An additional 11 units considered unnecessary by industry were in the "discussed briefly" category.

—"The positions which could be filled by electronic technicians covered the entire spectrum from routine jobs to those requiring a high degree of specialization. Therefore, a customized approach to technical training ranging from one to three years would reduce the dropout rate, encourage more students to enter the technical field, and better meet the demands of industry where technical needs range from the relatively simple to the most complex."

The first recommendation of this study pointed up the value of an open-ended curriculum. "A study should be made to ascertain the feasibility of developing a continuous technical curriculum whereby a student could enter a technical program and progress according to his ability."

Other recommendations endorsed the value of closer working relationships with guidance, industrial and educational personnel, the value of similar research in other regions and technologies, and the need for a follow-up study of electronic-technology graduates to determine the extent to which the program is meeting their educational needs.

The Mississippi State study of the post-secondary technical electronics curriculum should be a valuable source of information to all electronics teachers and curriculum specialists. Of special interest are the 435 content items and a reference bibliography of more than 60 titles. Also, college and school administrators and Department of Education supervisors should find the specific recommendations relating to a student-centered open-ended curriculum an important base for further consideration.

This study points up a situation that is common in many two-year colleges, a level of instruction that seems to be predicated on the dictates of collegiate accreditation more than on the requirements of employers, or of the educational needs of all the young people who attend. As long as the curriculum is bound by the standard measures of instructional content and other forms of evaluation that are generally associated with "college level" work, it will be difficult for these types of post-secondary schools to readily adopt an open-ended curriculum.

Industrial Technology Curriculum

6:17 "OPERATION GIANTSTEP: RESEARCH IN A NEW REMEDIAL PROGRAM AND COMMUNITY COLLEGE INDUSTRIAL TECHNOLOGY CURRICULUM FOR DISADVANTAGED HIGH SCHOOL GRADUATES" BY MANUEL STILLERMAN. BRONX COMMUNITY COLLEGE OF THE CITY UNIVERSITY OF NEW YORK, BRONX, NEW YORK. (PROJECT = 5-1336) 1966. (VT = 002-615) 119 PAGES.

Operation Giant-tep is the name of the Bronx Community College program to give vocational instruction to high school graduates who did not receive vocational training in high school and who were not prepared for college.

The two main problems of this operation were: Developing a post-high school vocational education program for disadvantaged high school graduates, and carrying out research to help design programs capable of salvaging this great pool of undeveloped manpower.

The report states that the community colleges of New York City do not have programs suitable for the population this project intends to serve, namely, general-diploma high school graduates who are interested in engineering-related careers. It was proposed, therefore, to develop a new curriculum in Industrial Technology. It was felt that even with a less demanding curriculum, a majority of the target population would not be adequately prepared, so a vestibule remedial program was also planned.

The research phase of Operation Giantstep was focused on high school graduates, rather than on dropouts. It was stated that "most remedial programs try to cope with the problems of idle youth who have dropped out of high school prior to graduation. Comparatively little has been done to assist the smaller but at least equally deserving group of high school graduates who lack both adequate technical training needed for employment or qualification for entrance to a junior college. . . ."

The operational plan consisted of four partially overlapping steps: (a) administrative tooling up; (b) program-developmental phase, (c) experimentation, and (d) follow-up of on-the-job experience. A total of 250 disadvantaged high school graduates are taking part in the program.

The report states that the results of the developmental and research efforts of Operation Giantstep will be discussed in a subsequent series of reports. It is anticipated that these reports will include descriptions of the three main sections: vestibule training, the Industrial Technology curriculum and research. It is also proposed that the personnel of the project will prepare abstracts and articles for publication in education journals, and that they will be contributing information relating to the topic through their participation in conferences and professional meetings.

"PLAIN TALK"

AS THE COMPLETED STUDIES reported in this issue are viewed in retrospect, it is evident that many of them have materially strengthened the vocational education curriculum. Along with some important additions to subject-matter content has come the communication of some thought-provoking topics and issues.

Most of the studies treated have given attention to the development of curriculum plans and materials for some particular occupation or group of related jobs. Others reported the proceedings of conferences and institutes, the organization of a special junior college program for disadvantaged youth, and the use of new forms of educational media.

The report of the "Conference to Discuss Occupational Data Requirements for Educational Planning" reveals the existence of a basic difference of opinion among educators. From presentations made at the conference, it is evident that one group supported the idea that labor-demand information was crucial for sound educational planning, particularly in the field of vocational education.

Another group at the conference was in strong disagreement. Its members contended that "users of such projections, unaware of the weaknesses in the methodological approach to such studies, would be misled into projecting unrealistic plans into the training and education field."

Open-Ended Curriculum Recommended

The Mississippi State University study of electronics content in post-secondary technical institutes calls for an open-ended curriculum that allows persons having divergent abilities and interests to participate in some phase of a broad program. It was stated that the employers of electronics technicians had openings in a wide range of positions within the technician category, and that various levels of instruction should be provided.

The "Conference on Implementing Career Development Theory and Research Through the Curriculum", reported by Tiedeman and Ashcraft, deals with a topic of vital concern to all persons in vocational and practical arts education. The concept of bringing group guidance into the school curriculum, which was discussed in the November edition of Plain Talk, should help foster better understanding and knowledge of work and employment to all young people. It is also essential, however, that persons having practical, job-related experience should be involved in the planning and operation of projected career-orientation curriculum plans and programs.

Almost every curriculum-related study reported in this issue is based on either a particular vocational subject or some form of school organization. The application of the curriculum to people, therefore, has been transmitted through some established program or institution. This means that work must still be done which gives first attention to *people*.

The school-by-school, or subject-oriented, approach to curriculum organization, valuable as each individual effort may be, is likely to miss the real educational needs of people to be served. Especially is this true for the needs of persons who are not in school or who are not profiting from the form of instruction they are now receiving.

Greater Effort Needed

When one recalls the recommendations of the Panel of Consultants and reviews the specific provisions of the Vocational Education Act of 1963, it becomes painfully clear that large sections of the population are still awaiting appropriate programs of vocational education.

This is a time when the "Challenge of the Sixties" is giving way to the "Nightmare of the Seventies." When the plight of the people we haven't served is gravely considered, the amount of research, innovation, and productive program operation directed toward them appears pitifully small.

The process of change in education has characteristically been tedious and deliberate—and for good reason. Many times the solid traditions of American public education have stood as safeguards against the forces of folly or expediency. But when dramatic new situations do call for drastic and rapid alterations in the educational program, they cannot be adequately served through an inexorably slow process of evolution.

But this country can no longer afford to have an educational system in which at least one-third of its population is handicapped for life.

In the past, it was not a great tragedy to be a school dropout. People who could not achieve success or satisfaction in school could always find some frontier of opportunity available, and many were able to fashion meaningful and productive lives. This is no longer true. Today, the dropout or reject, or the adult worker with obsolescent skills, faces a formidable array of closing doors. These disadvantaged individuals must be counted as social and economic liabilities. It is imperative, therefore, that schools must now adjust their programs to meet the needs of these people as they never have before. The traditional school policy of selection and rejection, whether in general or vocational high school, area vocational-technical school, or community college, can no longer prevail.

Leadership Is Required

If there is to be a realistic, universal program of occupational education for all people in all circumstances, it is not likely to be accomplished on a piecemeal basis. Unless activities are coordinated and articulated, the mere proliferation of new vocational programs and facilities is still likely to leave serious gaps, shortages and omissions in the total program. The solution to this dilemma lies in leadership.

National and state leadership is needed, as never before, to spell out the big issues and problems and to translate them into statements of position and policy. From these offices should come the guidance and direction that will insure that each local or regional institution takes on its full measure of responsibility—toward people and instructional program. Without this leadership, each form of educational institution which provides vocational instruction will tend to remain isolated, each continuing to provide the kinds of offerings rooted in past traditions.

But the commitment to serve all people cannot be imposed from above. In each school and college where vocational education is taught, the persons immediately involved in the teaching process must catch the urgency of the times, and each must take on some larger measure of concern.

What is called for here is not so much a change of practice as a change of heart. Leadership is the individual teacher seeking the way to provide a more meaningful program for each pupil—bright or dull, motivated or inattentive. And for the school administrator, it may be expressed through plans for keeping the buildings open longer in order to reach more people in the community.

ES 70, an experimental program sponsored by the United States Office of Education, should have particular interest to persons in vocational and practical arts education, because it has occupational competency as a major objective. Essentially, the program, which will be tried in 17 cooperating school districts across the country, will provide a high school curriculum combining academic and occupational training and personal development experience. "The student, upon leaving the school system, should be equipped with entry-level occupational skills and also with the qualifications necessary for continued education." As further plans for the implementation of "Education Systems 70" are developed, it is important that persons with knowledge and experience in vocational schoolwork are closely involved.

RESEARCH, DEMONSTRATION, INSTITUTES REPORTED IN THIS ISSUE

Completed Studies

TOPIC ONE: Curriculum Development Institutes and Laboratories

6:1 "1966 Summer Institutes on Fluid Power Education for Vocational and Technical Teachers" by Pearce, Theodore. The Fluid Power Society, Thiensville, Wis. (Project # 5-0019) 1967. (VT # 001-122) 17 pages.

6:2 "Occupational Data Requirements for Education Planning" by March, Georgianna B. University of Wisconsin, Madison, Wis. (Project # 5-0066) 1966. ERIC # ED 003 [illegible] MF $.27 HC $7.20. 165 pages.

[illegible] "Conference to Examine the Implications of Current Trends in Career Development Theory and Research for School Curriculum" by Tiedeman, David and Asheraft, [illegible]. National Vocational Guidance Association, Washington, D.C. (Project # 5-1304) 1966. ERIC # ED 010 182. MF $0.36 HC $8.20. 191 pages.

TOPIC TWO: New Vocational Curriculum Programs

6:1 "A Determination of Needed Adjustments and Extensions in the Curricular Patterns of Vocational Education in Agriculture" by Taylor, Robert E. The Ohio State University, Columbus, Ohio. (Project # 5-0031) 1966. ERIC # ED 010 497. MF $0.18 HC $4.12. 98 pages.

6:5 "An Industrial Arts Curriculum Project for the Junior High School" by Towers, Edward R. Ohio State University, Columbus, Ohio. (Project # 5-0059) 1966. (VT # 003-145) 37 pages.

6:6 "Project NOTHY—Needed Occupational Television Instruction for Youth" by Lawson, William H. and Bancroft, John. San Bernardino Valley College, San Bernardino, Calif. (Project # 5-0063) 1966. ERIC # ED 010 611. MF $0.18 HC $2.63. 67 pages.

6:7 "A Process for Determining Vocational Competencies for the Performance of Nine Essential Activities for Sales Personnel in the Feed Industry, and the Loci at Which the Competencies Could Be Taught" by Albracht, James J. Michigan State University, East Lansing, Mich. (Project # 5-0156) 1966. ERIC # ED 010 070. MF $0.27 HC $5.96. 119 pages.

6:8 "Ground-man-Gardener for Special Class Students (Educable Mentally Retarded Youth)" by Nicolaysen, G. Roy. Oakland Unified School District, Oakland, Calif. (Project # 5-0173) 1966. ERIC # ED 010 230. MF $0.09 HC 1.32. 39 pages.

6:9 "An Investigation and Development of the Cluster Concept as a Program in Vocational Education at the Secondary Level

Studies in Process

TOPIC ONE: Curriculum Development Institutes and Laboratories

"Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.), Vocational-Technical School" by Gagne, Robert M. American Institute for Research, Pittsburgh, Pa. (Project # 5-0009).

"Establishment of a Course of Study in American Industry as a Transitional Subject Between General and Vocational Education" by Face, Wesley L. and Flue, Eugene R. Stout State University, Menomonie, Wis. (Project # 5-0053).

"Pilot Study of a Program in Home Economics Which Prepares for Gainful Employment" by Cozine, June. Oklahoma State University, Stillwater, Okla. (Project # 6-1576).

"Conference on Planning and Programming of Vocational Education" by Cannell, Roger S. Stanford Research Institute, Menlo Park, Calif. (Project # 6-1736).

"Cross-National Conference on Selecting the Educational System to the Nation's Economy" by Fe-hay, Arthur W. Teachers College, Columbia University, New York, N.Y. (Project # 6-1967).

"Pittsburgh Technical Health Training Institute Demonstration Project" by Kishkunas, Louis J. Board of Public Instruction, Pittsburgh, Pa. (Project # 6-2015).

"An Eight-Week Seminar in an Introduction to Numerical Control on Two and Three Axis Machine Tools for Vocational and Technical Machine Tool Instructors" by Carlson, Arthur and Boldt, Milton. Milwaukee Vocational and Technical Schools, Milwaukee, Wis. (Project # 6-2332).

"Summer Institute To Prepare Vocational Educators for Curriculum Development through Action Research" by Ryan, T.A. Oregon State University, Corvallis, Ore. (Project # 7-0197).

TOPIC TWO: New Vocational Curriculum Programs

"An Integrated Vocational Education Services Pilot Program in a Secondary School" by Agan, Ray. Kansas State University, Manhattan, Kans. (Project # 5-0027).

"Development of a Curriculum and Materials for Teaching Basic Vocational Talents" by Dailey, John. The George Washington University, Washington, D.C. (Project # 5-0061).

"A Competency Pattern Approach to Curriculum Construction in Distributive Teacher Education" by Crawford, Lucy. Virginia Polytechnic Institute, Blacksburg, Va. (Project # 5-0166).

"The Development of a Laboratory Reading Skills Program" by Gotkin, Lassar G. New York Medical College, New York, N.Y. (Project # 5-0719).

"Training and Staff Requirements of Machinery Maintenance Personnel" by Lynn, Frank. Midwest Institute for Education, Research and Training INTEC, Chicago, Ill. (Project # 5-1201).

"The Development and Evaluation of Teaching Text, Operation, Maintenance and Repair of Air Cooled Gasoline Engines" by Henderson, G. E. University of Georgia, Athens, Ga. (Project # 5-1745).

"Teaching Vocational and Citizenship Education in Social Studies" by Howell, Kay M. Michigan State University, East Lansing, Mich. (Project # 5-0271).

"Experimental Curriculum for Electro-Mechanical Technicians in Computer and Business Machines Technology" by Fellows, Douglas M. Ward Technical Institute, University of Hartford, Hartford, Conn. (Project # 6-1759).

"The Preparation of Curriculum Materials and Development of Teachers for an Experimental Application of the Cluster Concept of Vocational Education at the Secondary Level" by Maley, Donald. University of Maryland, College Park, Md. (Project # 6-2312).

"Work Study Programs: Conduct and Consequences" by Schill, William J. University of Illinois, Urbana, Ill. (Project # 6-2351).

"Regional Workships on Project Development for Distributive Education Curricula" by Samson, Harlon. University of Wisconsin, Madison, Wis. (Project # 7-0167).

TOPIC THREE: New Forms of Educational Media

"Development of Multi-Media Programmed Instructional Materials for the Training of Law Enforcement Officers" by Cummings, John M. State Department of Education, Trenton, N.J. (Project # 6-2310).

"Computer-Aided Drafting and Design Summer Institute" by Morphonios, Alex. Miami-Dade Junior College, Miami, Fla. (Project # 7-0135).

TOPIC FOUR: Programs for Evening and Part-Time Schools

No Studies in Process.

TOPIC FIVE: Emerging Programs Beyond High School

"Development and Testing of an Experimental Mobile Instructional Facility for Applied Courses in Engineering Technology" by Kleine, Louis W. New Mexico State University, University Park, N.M. (Project # 6-2238).

TOPIC ONE: Curriculum Development Institutes and Laboratories

6:08 "Curriculum Development Institute" by Mabey, Donald. University of Maryland, College Park, Md. (Project # 5-0009) No Price. ERIC # ED 010 301. MF [illegible] HC $3.10, 135 pages.

6:09 "A Course in Gregg Shorthand Simplified: Written During Employment: An Analytical Study of Variations in a Phonetic System of Communication" by Gallea, Ruth H. Ruef. New York University, New York, N.Y. (Project # 5-8270) 1966. ERIC # ED 011 006. MF $0.18 HC $3.20, 80 pages.

6:11 "Development and Evaluation of a One Semester Stenography Course" by Martine, Patsy Blake. San Francisco State College, San Francisco, Calif. (Project # 5-8279) 1966. ERIC # ED 010 256. MF $0.18 HC $4.10, 92 pages.

6:12 "A Study of Recommendations for Technical Education Curricula" by Arnold, Joseph P. Purdue University, Lafayette, Ind. (Project # 5-8371) 1965. (VT # 003-520) 12 pages.

6:13 "Materials and Structural Design Seminar for Vocational-Tech Schools" by Davis, J. Clark. University of Nevada, Reno, Nev. (Project # 7-0053) 1967. (VT # 004-166) 113 pages.

TOPIC THREE: New Forms of Educational Media

6:14 "Experimentation with Computer Assisted Instruction in Technical Education" by Mitzel, Harold E. and Brandon, George L. Pennsylvania State University, University Park, Pa. (Project # 5-0035) 1966. ERIC # ED 010 493. MF $0.18 HC $5.90, 125 pages.

6:15 "The Relative Effectiveness of Supplementing Programed Instruction with Blocked Versus Spaced Review" by Scanlon, James A. Cornell University, Ithaca, N.Y. (Project # 7-8063) 1967. (VT # 002-889) 46 pages.

TOPIC FOUR: Programs for Evening and Part-Time Schools

No reports.

TOPIC FIVE: Emerging Programs Beyond High School

6:16 "A Comparative Analysis of Electronic Content in Public Post-High School Technical Institutes and Electronics Technology Requirements of Industry" by Vasek, Richard J. Mississippi State University, State College, Miss. (Project # 6-8590) 1967. (VT # 004-005) 93 pages.

6:17 "Operation Gianstep: Research in a New Remedial Program and Community College Industrial Technology Curriculum for Disadvantaged High School Graduates" by Stillerman, Manuel. Bronx Community College of the City University of New York, Bronx, N.Y. (Project # 5-1336) 1966. (VT # 002-615) 119 pages.

AVAILABILITY OF REPORTS FOR FURTHER STUDY

All reports which are followed by the letters ERIC and an acquisition number like ED 010 000, may be purchased from the ERIC Document Reproduction Service, Microphoto Division, The National Cash Register Company, Box 2206, Rockville, Md. 20852. The letters (MF) indicate the availability of microfiche copies; and (HC) for hardbound copies, at the prices given.

Other completed reports that have not been entirely processed through ERIC may have what is called a Clearinghouse acquisition number, like VT 000 000. A facsimile copy of each entire report, only, may be obtained at cost. Address requests for VT numbered reports to: Retrieval Specialist, ERIC Clearinghouse, The Center for Vocational and Technical Education, Ohio State University, 980 Kinnear Road, Columbus, Ohio 43212.

Important: When ERIC numbers like ED 010 000 are given in subsequent issues, orders should then be placed directly with the ERIC Document Reproduction Service.